CLAIMS

1. Recombinant vector, characterized in that it comprises a polynucleotide containing a cis-acting central initiation region (cPPT) and a cis-acting termination region (CTS), these regions being of retroviral or retroviral-like origin, said vector further comprising a defined nucleotide sequence (transgene or sequence of interest) and regulatory signals for reverse transcription, expression and packaging of retroviral or retroviral-like origin.

2. Vector according to Claim 1, characterized in that the sequences of retroviral origin are derived from a lentivirus genome.

3. Vector according to Claim 1, characterized in that the sequences of retroviral-like origin are derived from a retrotransposon.

4. Vector according to any one of the Claims 1 to 3, characterized in that the transgene or the sequence of interest is contained in an expression cassette comprising regulatory signals for transcription and expression.

5. Recombinant retroviral particles comprising a polynucleotide containing a cis-acting central initiation region (cPPT) and a cis-acting termination region (CTS), these regions being of retroviral or retroviral-like origin and being inserted in a functional orientation with regulatory signals for reverse transcription of retroviral or retroviral-like origin.

6. Recombinant retroviral vector particles comprising:

   a) a gag polypeptide corresponding to nucleoproteins of a lentivirus or to functional polypeptide derivatives (GAG polypeptides);

   b) a pol polypeptide constituted by the RT, PRO, IN proteins of a lentivirus or a functional polypeptide derivative (POL polypeptide);

   c) an envelope polypeptide or functional polypeptide derivatives (ENV polypeptides);

   d) a recombinant nucleotide sequence comprising a defined nucleotide sequence (transgene or a sequence of interest), placed under the control of regulatory signals for transcription

and expression, a sequence containing regulatory signals for reverse transcription, expression and packaging of retroviral or retroviral-like origin and a polynucleotide comprising a cis-acting central initiation region (cPPT) and a cis-acting termination region (CTS), these regions being of retroviral or retroviral-like origin and being inserted in a functional orientation with said regulatory signals of retroviral or retroviral-like origin.

7. Recombinant vector according to Claim 5 or 6, characterized in that the regulatory signals for reverse transcription, expression and packaging are of lentiviral origin, and the polynucleotide comprising the cPPT and CTS regions is of lentiviral origin.

8. Recombinant vector according to any one of the Claims 1 to 7, characterized in that the regulatory signals for reverse transcription, expression and packaging and the polynucleotide comprising the cPPT and CTS regions are derived from a HIV-type retrovirus, in particular HIV-1 or HIV-2.

9. Recombinant vector according to Claim 8, characterized in that the regulatory signals for reverse transcription, expression and packaging and the polynucleotide comprising the cPPT and CTS regions are derived from a virus selected from the lentiviruses CAEV, EIAV, VISNA, HIV, SIV or FIV.

10. Recombinant vector according to any one of the Claims 1 to 9, characterized in that the polynucleotide is a DNA sequence comprising the cis-acting central initiation region (cPPT) and the termination region (CTS) of a HIV-1 retroviral genome.

11. Recombinant vector according to any one of the Claims 1 to 9, characterized in that the polynucleotide comprises the cPPT and CTS regions of a sequence which may be selected from the sequences shown in Figure 11 or in that it is one of these sequences, mutated by deletion or insertion of one or more nucleotides, provided that the polynucleotide permits the formation of a triplex on reverse transcription of the vector under the control of suitable

regulatory elements.

12. Vector according to any one of the Claims 1 to 11, characterized in that it is the plasmid pTRIP.EGFP, deposited with the CNCM on 15th April 1998, with accession number I-2005.

13. Vector according to any one of the Claims 1 to 11, characterized in that it is the plasmid pTRIP.MEL-IRES-GFP, deposited with the CNCM on 20th April 1999 with accession number I-2185.

14. Recombinant vector according to any one of the Claims 5 to 11, characterized in that the gag. pol and env sequences are derived from sequences of a HIV retrovirus, in particular HIV-1 or HIV-2.

15. Recombinant vector according to any one of the Claims 5 to 12, characterized in that the gag and pol sequences are derived from the sequences of a HIV retrovirus and the env sequence is derived from a different HIV retrovirus or from a virus.

16. Recombinant vector according to Claim 15, characterized in that the env sequence codes for amphotropic ENV polypeptides.

17. Recombinant vector according to Claim 15, characterized in that the env sequence codes for ecotropic ENV polypeptides.

18. Recombinant vector according to Claim 15, characterized in that the env sequence is derived from the vesicular somatitis virus (VSV).

19. Recombinant vector particles comprising a recombinant nucleotide sequence comprising a defined nucleotide sequence (transgene), placed under the control of regulatory signals for transcription and expression, regulatory signals for reverse transcription, expression and packaging and a polynucleotide containing a cis-acting central initiation region (cPPT) and a cis-acting termination region (CTS).

20. Recombinant vector particles comprising a recombinant nucleotide sequence containing a defined nucleotide sequence (transgene or sequence of interest), placed under the control of

regulatory signals for transcription and expression, regulatory signals for reverse transcription, expression and packaging of a retrotransposon and a polynucleotide containing a cis-acting central initiation region (cPPT) and a cis-acting termination region (CTS), these regions being derived from a transposon and being inserted in a functional orientation with the retrotransposon regulatory signals.

21. Recombinant retroviral-like particles comprising:

a) a polynucleotide containing a cis-acting central initiation region (cPPT) and a cis-acting termination region (CTS), these regions being derived from a retrotransposon and inserted in a functional orientation with retrotransposon regulatory signals;

b) a polypeptide corresponding to the nucleoproteins of a retrotransposon or to functional polypeptide derivatives (GAG polypeptides);

c) a pol polypeptide corresponding to RT, PRO, IN proteins of a retrotransposon or a functional polypeptide derivative (POL polypeptide);

d) a viral envelope polypeptide;

e) a recombinant nucleotide sequence comprising a defined nucleotide sequence (transgene or sequence of interest), placed under the control of regulatory signals for transcription and expression, and regulatory signals for reverse transcription, expression and packaging of the retrotransposon.

22. Recombinant vector according to any one of the Claims 1, 3 or 15, characterized in that the regulatory signals for reverse transcription, expression and packaging and the polynucleotide comprising the cPPT and CTS regions are derived from a yeast retrotransposon.

23. Recombinant cells, characterized in that they are recombined with a vector according to any one of the Claims 1 to 22.

24. Recombinant cells according to Claim 23, characterized in that they are non-mitotic differentiated eukaryotic cells.

25. Recombinant cells according to Claim 23, characterized in that they are primary eukaryotic cells or immortalized cell lines.

26. Cells according to Claim 24, characterized in that they are lung cells, brain cells, epithelial cells, astrocytes, microglia, oligodendrocytes and neurons, muscle, hepatic, dendritic, neuronal cells, bone marrow stem cells, macrophages, fibroblasts, hematopoietic cells, or lymphocytes.

27. Composition for therapeutic purposes, characterized in that it comprises a vector according to any one of the Claims 1 to 22 or recombinant cells according to any one of Claims 23 to 26.

28. Immunogenic composition, characterized in that it comprises a vector according to any one of Claims 1 to 22 or recombinant cells according to any one of Claims 23 to 26.

29. Use of a polynucleotide comprising a cis-acting central initiation region (cPPT) and a cis-acting termination region (CTS), these regions being of retroviral or retroviral-like origin, for the construction of a recombinant vector.

30. Use of a polynucleotide comprising a cis-acting central initiation region (cPPT) and a cis-acting termination region (CTS), these regions being of retroviral or retroviral-like origin for ex vivo nuclear import of a nucleotide sequence (transgene or nucleotide sequence of interest) into eukaryotic cells.

31. Use of a recombinant vector according to any one of the Claims 1 to 22 for ex vivo transfection or ex vivo transduction of non-mitotic differentiated cells.

32. Use of a recombinant vector according to any one of the Claims 1 to 22 for the ex vivo transfection or ex vivo transduction of primary cells or immortalized cell lines.

33. Polynucleotide comprising a nucleotide sequence derived from a retroviral genome and containing about 80 to 120 nucleotides, preferably 90 to 110 nucleotides, said nucleotide sequence being flanked on one side by a cis-acting central initiation nucleotide sequence

(cPPT) and on the other side by a cis-acting central termination nucleotide sequence (CTS).

34. Polynucleotide according to Claim 33, characterized in that the nucleotide sequence derived from the retroviral genome is derived from a HIV genome, in particular HIV-1, and comprises about 98 nucleotides and in that the cPPT nucleotide sequence comprises at least 10 nucleotides and the cis-acting CTS nucleotide sequence comprises at least 15 nucleotides, the nucleotide sequences cPPT and CTS being derived from a HIV genome, preferably HIV-1.

35. Polynucleotide according to Claim 33 or 34, characterized in that it is in a single-stranded or double-stranded form.

36. Polynucleotide according to Claim 33 or 34, characterized in that it is in a triplex form.

37. Use of a polynucleotide comprising a cis-acting central initiation region (cPPT) and a cis-acting termination region (CTS), these regions being of retroviral or retroviral-like origin, for transfection or transduction of eukaryotic cells with a transgene or a polynucleotide of interest.

38. Use of a recombinant vector or a polynucleotide according to Claims 1 to 22 for in vivo transduction.

39. Use of a recombinant vector or a polynucleotide according to Claim 38 in which in vivo transduction is performed by injection into a tissue.

40. Polynucleotide according to Claim 33 or 34 combined with a nucleotide sequence of interest or with a transgene.